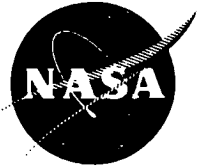


NASA TECH BRIEF

Lewis Research Center



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Commercially Available Black Chrome Is An Effective Solar Collector Coating

It has been determined that black chrome, a commercially available electroplated decorative finish, has excellent energy absorbing properties for coating solar collectors.

Solar collectors are devices that collect the Sun's energy for conversion to heat and electrical power. To be effective, a solar collector coating should absorb and retain as much solar energy as possible; to be practical, it should be readily available, easily applied, low cost, and have long term durability under solar radiation.

Tests were conducted on steel and aluminum panels plated with black chrome by commercial electroplaters using the same tanks, chemicals, and procedures used to apply decorative finish black chrome on table legs and metal chair trim. The solar collection properties of the black chrome panels were compared with black paint and with two samples of black nickel coating especially prepared for solar collectors.

Test results showed that the black paint absorbed more of the Sun's energy but also lost by emittance more of the absorbed energy than either black chrome or black nickel. Both the black chrome and the black nickel retained more energy for conversion. The properties of black chrome are essentially equal to those of black nickel; thus, black chrome is an effective and readily available coating for solar collectors. Also, the application of black chrome was determined to be equally feasible on aluminum or steel. In appearance, black chrome is indistinguishable from black nickel.

Notes:

1. Further information is available in the following report:

NASA TM-X-71596, Spectral Reflectance Properties of Black Chrome for Use as a Solar Selective Coating

Copies may be obtained at cost from:
Aerospace Research Applications Center
Indiana University
400 East Seventh Street
Bloomington, Indiana 47401
Telephone: 812-337-7833
Reference: B74-10121

2. Specific technical questions may be directed to:
Technology Utilization Officer
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Patent Status:

Inquiries concerning rights for the commercial use of this invention should be addressed to:

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(LEW-12159)

Category 04,08